Prevention of Significant Air Quality Deterioration Review

Final Determination

June 19, 2012

Facility Name: Chambers R&B Landfill
City: Homer
County: Banks
AIRS Number: 04-13-011-00014
Application Number: 20161
Date Application Received: January 13, 2011

State of Georgia
Department of Natural Resources
Environmental Protection Division
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BACKGROUND

On January 13, 2011, Chambers R&B Landfill (hereafter Chambers Landfill) submitted an application for an air quality permit to construct and operate a landfill gas to energy (LFGTE) facility at the existing landfill site, consisting of a landfill gas (LFG) treatment system and six internal combustion (IC) engines. The facility is located at 610 Bennett Road in Homer, Banks County. The proposed project will treat the LFG for use in generating electricity. The treatment system will filter, de-water, and compress the LFG prior to use as fuel in the internal combustion engines. Each Caterpillar G3520C internal combustion engine is rated at 2,233 bhp with a heat input of 17.87 MMBtu/hr. The engines are designed to use the LFG as fuel with each generator set able to produce up to 1,600 kilowatts (kW) of electricity. The Chambers R&B Landfill application also includes the operation of a leachate concentrator in an alternative operating scenario. The landfill will have the flexibility to operate the IC engines either with or without the leachate concentrator. In this process the heat content from the exhaust gas from three of the engines is used to evaporate water in the leachate.

On April 27, 2012, the Division issued a Preliminary Determination stating that the modifications described in Application No. 20161 should be approved. The Preliminary Determination contained a draft Air Quality Permit for the construction and operation of the modified equipment.

The Division requested that Chambers Landfill place a public notice in a newspaper of general circulation in the area of the existing facility notifying the public of the proposed construction and providing the opportunity for written public comment. Such public notice was placed in the *Banks County News* (legal organ for Banks County) on May 9, 2012. The public comment period expired on June 8, 2012.

During the comment period, comments were received from the Chambers R&B Landfill facility. There were no comments received from the U.S. EPA region IV or the general public.

A copy of the final permit is included in Appendix A. A copy of written comments received during the public comment period is provided in Appendix B.

CHAMBERS R&B LANDFILL COMMENTS

Comments were received from William S. Apple, Project Manager from Sage Environmental Consulting, L.P., on behalf of the Chambers R&B Landfill, by mail on May 22, 2012.

Comment 1
Note: The comment from the facility is summarized below. Please refer to the letter dated May 21, 2012 for the entire comment.

Landfill Gas Flow Monitoring for the RICE MACT

The six IC engines are affected sources under the National Emission Standard for Hazardous Air Pollutants (NESHAP) for reciprocating internal combustion engines (RICE) in Subpart ZZZZ of 40 CFR Part 63 (i.e., the RICE MACT). The IC engines will combust only landfill gas (LFG), be constructed after December 19, 2002 at major source of HAP emissions and have a site rating of greater than 500 hp. Therefore, the IC engines belong to a subcategory of stationary RICE subject to limited requirements under the rule

For these IC engines, owners and operators are only required to provide initial notification within 30 days of commencing construction, use separate fuel meters to monitor and record the amount of each fuel used daily, and make an annual demonstration that the engine continues to be part of the subcategory (i.e., show through calculations that the landfill gas or digester gas makes up more than 10 percent of the annual heat input).

EPA also added the following monitoring requirement at 40 CFR 63.6625(c) for IC engines that combust landfill gas as the primary fuel;

"If you are operating a new or reconstructed stationary RICE which fires landfill gas or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis, you must monitor and record your fuel usage daily with separate fuel meters to measure the volumetric flow rate of each fuel."

Modified Condition 5.2.1.d of the draft PSD permit cites this as the regulatory basis for requiring WM to install "a device to continuously measure the landfill gas flow rate to each IC Engine." WM strongly believes that it was not the intent of EPA to have this regulatory language interpreted in such a manner so as to require each IC engine to have a separate fuel meter when only a single fuel is combusted. First, the plain language of the rule only requires the measurement of the "volumetric flow rate of each fuel." Therefore, each fuel, and not each engine, are required to have separate fuel meters. The purpose of having separate fuel meters for each fuel combusted is to determine whether the affected source qualifies for a subcategory not subject to an emission standard under the rule. In the case of the proposed LFGTE facility, since the IC engines will combust only landfill gas that has been conditioned in the treatment system, determining the amount of LFG that makes up each unit's gross annual heat input, on a percentage basis, can be accomplished with a single metering device. In fact, it can be accomplished without any such device.

Therefore, WM respectfully requests that the following changes be made to the permit:

- Add Condition 3.3.10 that establishes an operating limitation to combust only LFG in the IC engines;

- Revise Condition 5.2.1.d to read, "A device to continuously measure the landfill gas flow rate to the IC engines. On a daily basis, the consumption of LFG combusted in the engines shall be measured and recorded"; and

- Add as an exceedance in Condition 6.1.7.b.v, "firing any fuel in the IC Engines not meeting the requirements of Condition 3.3.10."

EPD Response.

The Division has reviewed the proposed permit conditions submitted by the facility. It has been determined that if it can be shown that the engines burn landfill gas 100 percent of the time, separate fuel meters to each IC engine are not required. The Division has modified the conditions as requested. The permit conditions now read:

3.3.10 The Permittee shall combust only landfill gas in the IC engines (SN01, SN02, SN03, SN04, SN05, and SN06).
[40 CFR 52.21 Avoidance, 40 CFR 63.6625(c) and 63.6655(c)]

5.2.1 The Permittee shall install, calibrate, maintain, and operate monitoring devices for the measurement of the indicated parameters on the following equipment. Data shall be recorded at the frequency specified below. Where such performance specification(s) exist, each system shall meet the applicable performance specification(s) of the Division's monitoring requirements.
[40 CFR 52.21, 391-3-1-.02(6)(b)1, 40 CFR 70.6(a)(3)(i), 40 CFR 60.756(c), and 40 CFR 63.6625(c)]

a. A gas flow rate measuring device that records flow to each control device every 15 minutes.

b. A heat sensing device, such as an ultraviolet beam sensor or thermocouple, at the pilot light or the flame itself, to indicate the continuous presence of a flame for any flare.

c. Devices to monitor the parameters specified in the current approved treatment system monitoring plan. [Note: The treatment system need not be operating when landfill gas is not being routed to it.].

d. A device to continuously measure the landfill gas flow rate to the IC Engines. On a daily basis, the consumption of LFG combusted in the engines shall be measured and recorded.
[40 CFR 63.6625(c)]

e. A non-resettable hour meter on each IC engine. Data shall be recorded monthly.
[40 CFR 60.4243(b)(2)(ii)]

f. A device, on each IC engine (SN01, SN02, SN03, SN04, SN05, and SN06), to measure the manifold temperature. Data shall be recorded at the frequency specified in Condition 5.2.10.

g. A device, on each IC engine (SN01, SN02, SN03, SN04, SN05, and SN06), to measure the manifold pressure. Data shall be recorded at the frequency specified in Condition 5.2.10.

h. A device, on each IC engine (SN01, SN02, SN03, SN04, SN05, and SN06), to measure the ignition timing. Data shall be recorded at the frequency specified in Condition 5.2.10.

i. A device, on each IC engine (SN01, SN02, SN03, SN04, SN05, and SN06), to measure the engine load (generator output, megawatts). Data shall be recorded at the frequency specified in Condition 5.2.10.

6.1.7 For the purpose of reporting excess emissions, exceedances or excursions in the report required in Condition 6.1.4, the following excess emissions, exceedances, and excursions shall be reported: [391-3-1-.02(6)(b)1, 40 CFR 70.6(a)(3)(i), and 40 CFR 60.753(e)]

a. Excess emissions: (means for the purpose of this Condition and Condition 6.1.4, any condition that is detected by monitoring or record keeping which is specifically defined, or stated to be, excess emissions by an applicable requirement)

None required to be reported in accordance with Condition 6.1.4.

b. Exceedances: (means for the purpose of this Condition and Condition 6.1.4, any condition that is detected by monitoring or record keeping that provides data in terms of an emission limitation or standard and that indicates that emissions (or opacity) do not meet the applicable emission limitation or standard consistent with the averaging period specified for averaging the results of the monitoring)

i. On any gas collection well, any reading of gauge pressure that is not negative. [391-3-1-.02(6)(b)1 and 40 CFR 70.6(a)(3)(i)] [Vault NS-044-RR, 09/11]

ii. On any gas collection well, any reading of temperature that equals or exceeds 55 °C (131 °F), unless a higher temperature has been approved by the Division, in accordance with Condition 3.3.2c. [391-3-1-.02(6)(b)1 and 40 CFR 70.6(a)(3)(i)] [Vault NS-044-RR, 09/11]

iii. On any gas collection well, any reading of nitrogen concentration that equals or exceeds 20 percent or oxygen concentration that equals or exceeds 5 percent, unless a higher percentage has been approved by the Division, in accordance with Condition 3.3.2c. [391-3-1-.02(6)(b)1 and 40 CFR 70.6(a)(3)(i)] [Vault NS-044-RR, 09/11]

iv. Any reading of surface methane concentration that equals or exceeds 500 ppm above background concentration. [391-3-1-.02(6)(b)1 and 40 CFR 70.6(a)(3)(i)] [Vault NS-044-RR, 09/11]

v. Firing any fuel in the IC Engines not meeting the requirements of Condition 3.3.10. [391-3-1-.02(6)(b)1 and 40 CFR 70.6(a)(3)(i)]

Comment 2

Performance Testing for PM_{10}, $PM_{2.5}$, and SO_2

New Condition 4.2.2 requires performance testing to be conducted for emissions of PM_{10}, $PM_{2.5}$, and SO_2 from each engine to demonstrate initial compliance with BACT with subsequent testing performed at 5-year intervals in accordance with Condition 4.2.5. As an alternative, one engine may be tested for PM_{10}, $PM_{2.5}$, and SO_2 every year on a rotating basis. First, WM is requesting the GA EPD delete the reference to EPA Method 201A in Condition 4.1.3.k. This performance test method will not be applicable to the IC engines since the diameter and temperature of each exhaust stack will not support the 201A cyclone. WM will demonstrate compliance with BACT for PM_{10} and $PM_{2.5}$ by measuring total PM in the stack using Methods 5 and 202. Second, WM believes that the frequency for subsequent performance testing is too stringent. All IC engines associated with the LFTGE facility will essentially be identical and will combust fuel conditioned in the treatment system. Since particulate matter and SO_2 emissions from the combustion of LFG are a function of the quality of the LFG, and all engines will combust fuel from the same source, it is reasonable to assume that performance test results for one engine will be representative of all engines. Therefore, WM requests that Condition 4.2.5 be revised to read as follows:

"Following the test required by Condition 4.2.2, the Permittee shall conduct subsequent performance testing for one engine every 3 years, on a rotating basis, to demonstrate compliance with the PM_{10}, $PM_{2.5}$, and SO_2 emission limits. The amount of time between performance tests for any given engine shall be less than 18 years."

Three years was chosen as the time interval for the subsequent testing since this will increase the likelihood of coordinating this testing with the BACT/NSPS testing required by Condition 4.2.4. Since all IC engines are required to be initially tested under Condition 4.2.2, GA EPD will have the opportunity to review the emissions performance of each engine within 180 days of startup. After review of the performance test results, GA EPD will be able to confirm whether testing for one engine will be considered representative of all engines. If GA EPD finds that this is not the case, the agency can use its authority under 391-3-1-.03(10)(e)6.(i)(IV) to reopen the permit for cause to revise the permit and assure compliance with BACT.

EPD Response.

The Division does not agree that Method 201A should be removed from Condition 4.1.3.k. Leaving both methods in the permit provides the facility with flexibility in determining what test method to use. The condition has been reworded in this final permit amendment as shown below.

4.1.3 Performance and compliance tests shall be conducted and data reduced in accordance with applicable procedures and methods specified in the Division's Procedures for Testing and Monitoring Sources of Air Pollutants. The methods for the determination of compliance with emission limits listed under Sections 3.2, 3.3, and 3.4 which pertain to the emission units listed in Section 3.1 are as follows:

a. Method 1 for the determination of sampling location and number of traverse points.

b. Method 2, 2A, 2C, or 2D, as appropriate, for determination of velocity and volumetric flow rate to the flare.

c. Method 3A or 3C for the determination of oxygen concentration.

d. Method 3C for the determination of nitrogen concentration.

e. Method 9 and the procedures contained in Section 1.3 of the above referenced document for the determination of opacity.

f. Method 18 for the determination of organic component concentration in the gas stream to the flare.

g. Method 21 for the determination of surface methane concentration.

h. Method 22 for the determination of visible emissions from a flare.

i. ASTM D1946 for the determination of hydrogen and carbon monoxide concentrations in the gas stream to the flare.

j. ASTM D2382 for the determination of the net heat of combustion of each component in the gas stream to the flare if published values are not available or cannot be calculated.

k. Method 201 or 201A in conjunction with Method 202 for the determination of particulate matter concentration. Method 5 in conjunction with Method 202 may be used as an alternative. The minimum sample time shall be one hour per run.

l. Method 3B for the determination of the emissions rate correction factor or excess air. Method 3A may be used as an alternative to Method 3B.

m. Method 6 or 6C for the determination of sulfur dioxide concentration. The minimum sample time shall be one hour per run.

n. Method 7 or 7E for the determination of nitrogen oxides concentration. The minimum sample time shall be one hour per run.

o. Method 10 for the determination of carbon monoxide concentration. The minimum sample time shall be one hour per run.

p. Method 25A for the determination of volatile organic compounds. The minimum sample time shall be one hour per run.

q. Method 323 for the determination of formaldehyde concentration. The minimum sample time shall be one hour per run.

Minor changes in methodology may be specified or approved by the Director or his designee when necessitated by process variables, changes in facility design, or improvement or corrections that, in his opinion, render those methods or procedures, or portions thereof, more reliable.
[391-3-1-.02(3)(a)]

The Division does not agree with the revisions to Condition 4.2.5 as proposed by the facility. It has been the policy of the Division to conduct performance testing on every landfill gas fired engine. Although the engines are all the same, the performance of each engine can vary. There is also a concern about the length of time between tests. The Division is requiring the facility to conduct PM_{10} and $PM_{2.5}$ performance tests every year 5 years. However, the Division is willing to revisit this issue in the future, when the permit comes up for renewal. If the test results for PM_{10} and $PM_{2.5}$ are well below the limit, the Division will consider the request for less frequent testing. The permit condition has been modified to remove the periodic testing requirements for SO_2. The permit condition now reads:

4.2.5 Following the test required by Condition 4.2.2, the Permittee shall conduct subsequent performance testing every 5 years to demonstrate compliance with the PM_{10} and $PM_{2.5}$ emission limits. PM_{10} and $PM_{2.5}$ testing shall be conducted on all IC engines (SN01, SN02, SN03, SN04, SN05, and SN06).

As an alternative to conducting PM_{10} and $PM_{2.5}$ testing on all IC engines (SN01, SN02, SN03, SN04, SN05, and SN06) every five years, the Permittee shall test one engine every year on a rotating basis.
[391-3-1-.02(6)(b)1(i) and 40 CFR 52.21]

Comment 3

Specific Recordkeeping and Reporting Requirements

New Condition 6.2.20 requires WM to record the date and time when LFG is directed to the flare(s) or treatment system. In your April 24, 2012 letter, GA EPD states the "the purpose of this condition is to ensure that the landfill gas is either burned in the flare or sent to the treatment system for combustion in the IC engines." It would be more practical to document the dates and times LFG is not routed to either the flare(s) or treatment system since WM is required by Condition 3.3.2.f to operate the flares or treatment system at all times when the LFG is routed to the system. Therefore, WM is requesting that Condition 6.2.20 be revised to read as follows:

"The Permittee shall record the date and time when landfill gas is not directed to either the flare(s) or the treatment system."

EPD Response.

The Division has modified the condition as requested. The permit condition now reads:

6.2.20 The Permittee shall record the date and time when landfill gas is not directed to either the flare(s) or the treatment system.
[391-3-1-.02(6)(b)]

APPENDIX A

AIR QUALITY PERMIT
4953-011-0014-V-03-1

APPENDIX B

WRITTEN COMMENTS
RECEIVED DURING
COMMENT PERIOD